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REVIEWS

Proceedings of the Coal Mining Institute of America. Thirty-third Annual Meeting, Pittsburgh, Pennsylvania, December, 1919. Pp. 158.

In an article on the "Future Development of Fuels," Henry Koeisinger, fuel engineer, United States Bureau of Mines, discusses those modes of coal consumption that utilize most fully the energy latent in the fuel, namely by-product production of coke, the use of powdered coal, and the use of so-called "colloidal fuel," a mixture of powdered coal and fuel oil. Electrification of railroads and better combustion of coal in the commoner methods of utilization come in for discussion.

Pages 34 to 43 are devoted to an excellently illustrated article by Reinhardt Thiessen of the United States Bureau of Mines, on the "Constitution of Coal through a Microscope."

Pages 89 to 101 are devoted to a paper by H. C. Ray, professor of ore dressing at the University of Pittsburgh, on "Modern Practices in the Washing of Coal," illustrated with nine text figures.

E. S. B.

Report on Some Sources of Helium in the British Empire. By J. C. McLennan and Associates. Canada Department of Mines, Mines Branch, Bulletin 31, 1920. Pp. 72.

Shortly after the commencement of the war, it became evident that, if helium were available in sufficient quantities to replace hydrogen in naval or military airships, the losses in life and equipment arising from the use of hydrogen would be enormously lessened. Helium, as is known, is most suitable as a filling for airship envelopes, in that it is non-inflammable and non-explosive, and, if desired, the engines may be placed within the envelope. By its use it is also possible to secure additional buoyancy by heating the gas (electrically or otherwise), and this fact might possibly lead to considerable modifications in the technique of airship maneuvers and navigation. The loss of gas from diffusion through the envelope is also less with helium than with hydrogen, but, on the other hand, the lifting power of helium is about 10 per cent less than that of hydrogen.

Early in 1915 Dr. J. C. McLennan, head of the department of physics in Ontario University, was requested by the Board of Invention and Research, London, England, to investigate the helium content in various natural gas supplies within the British Empire. As a result of these investigations it has been shown that the largest source of supply of helium at present known within the empire is located in Canada. Commercial methods of separating helium from the other components of natural gas were developed as a result of the preliminary investigations, and considerable progress was made toward the development of methods for the production of helium on a commercial scale, as a result of which it was shown that helium could be produced at a cost of somewhat less than $0.25 per cubic foot at normal pressures and temperatures.

As a result of a large number of analyses, which are given in this report, it was found that the richest natural gases in Canada contained about 0.33 per cent of helium—a percentage believed to be sufficient for profitable commercial extraction, but considerably lower than the percentages which characterize the gases from a number of wells in Kansas, where the helium content ranges from 1.5 to 2 per cent. Analyses are given of natural gases from Ontario, Alberta, and British Columbia.

As a supplemental investigation, a study was made of the radioactivity of a number of these gases. It was found that when the gases escape from the well they usually contain the emanations of radium and thorium. The thorium emanations are very short-lived, but the decadence in the radium emanations is much slower. Measurements of the radioactivity of a number of gases were made, the method used involving the deduction of the amount of radium emanation from measurements of the increase in electrical conductivity which the presence of radium emanations imparts to the gas.

E. S. B

Potash Recovery at Cement Plants. By ALFRED W. G. WILSON. Canada Department of Mines, Mines Branch, Bulletin 29, 1909. Pp. 34, pls. 10.

Considerable interest was awakened during the war by the cessation of potash imports from Germany in all possible substitute sources in the United States and Canada. The report under review is the outcome of investigations started then by the Canadian War Trade Board.

The wisdom of peace-time development of our slender resources of potash-bearing brines may be challenged. Much might be said in